Seismic Readiness Guidelines

Symbiote's modular furniture systems are built for strength and stability, especially in earthquake-prone areas. Our products are often installed where seismic safety is a priority, and we incorporate design features to help them stay upright and secure during an earthquake.

The performance of modular furniture during a seismic event depends on several factors, including its design, materials, installation, and the strength of the earthquake. Well-designed, sturdy furniture made from durable materials is more likely to withstand seismic forces. Heavier pieces with a low center of gravity are also less likely to tip over.

To enhance stability, we utilize specially designed left- and right-handed brackets that secure components together, forming a robust, unified structure. Many of our parts also include extra screw holes for reinforced attachment. For added safety, we offer anchoring brackets that secure furniture to the building walls, floors, or ceilings. Additionally, these accessories also stabilize power and utility feeds, protecting the integrity of integrated systems and minimizing service disruption or repair time.

With thoughtful engineering and customizable safety options, Symbiote delivers durable, reliable furniture designed to meet the challenges of seismic environments.

Seismic-ready furniture solutions and best practices for California

The California Department of Health Care Access and Information (HCAI) enforces California's Title 24 building standards for healthcare facilities, including hospitals, skilled nursing facilities, and intermediate-care facilities. California has codified seismic safety requirements for these facilities to ensure they remain operational after a seismic event. These requirements apply to equipment, partitions, etc., that are considered integral to the building structure. Chapter 16A of the Building Code (CBSC) excludes modular furniture, except tall storage cabinets. Effectively, the requirements are ***voluntary guidelines*** enhancing overall safety by reducing the risks of modular furniture shifting, tipping, falling, or becoming nonfunctional.

The products and installation methods described in this document are our product recommendations for best practices developed over the years of product installations in California and elsewhere. It is important to understand that these examples have not been tested by the Office of Statewide Health Planning and Development (OSHPD) for compliance with California Building Standards Code / Title 24 or evaluated by the Office of Public Maintenance (OPM). OSHPD may issue Code Application Notices (CANs) to interpret specific sections of the CBSC and its Field Compliance Unit has oversight to confirm that hospitals comply with all code requirements or voluntary guidelines and best practices.

Before installing any modular furniture, it is crucial to consult with the local authorities, as they have the final decision if a proposed furniture installation plan is approved. Since OSHPD's review and approval process depends on the specific location of the installation, it is the responsibility of the contractor to seek professional engineering review and approval if required. Following these steps will ensure the furniture setup meets safety standards and is properly installed for use in healthcare facilities.

UltraFrame – Modular Furniture System

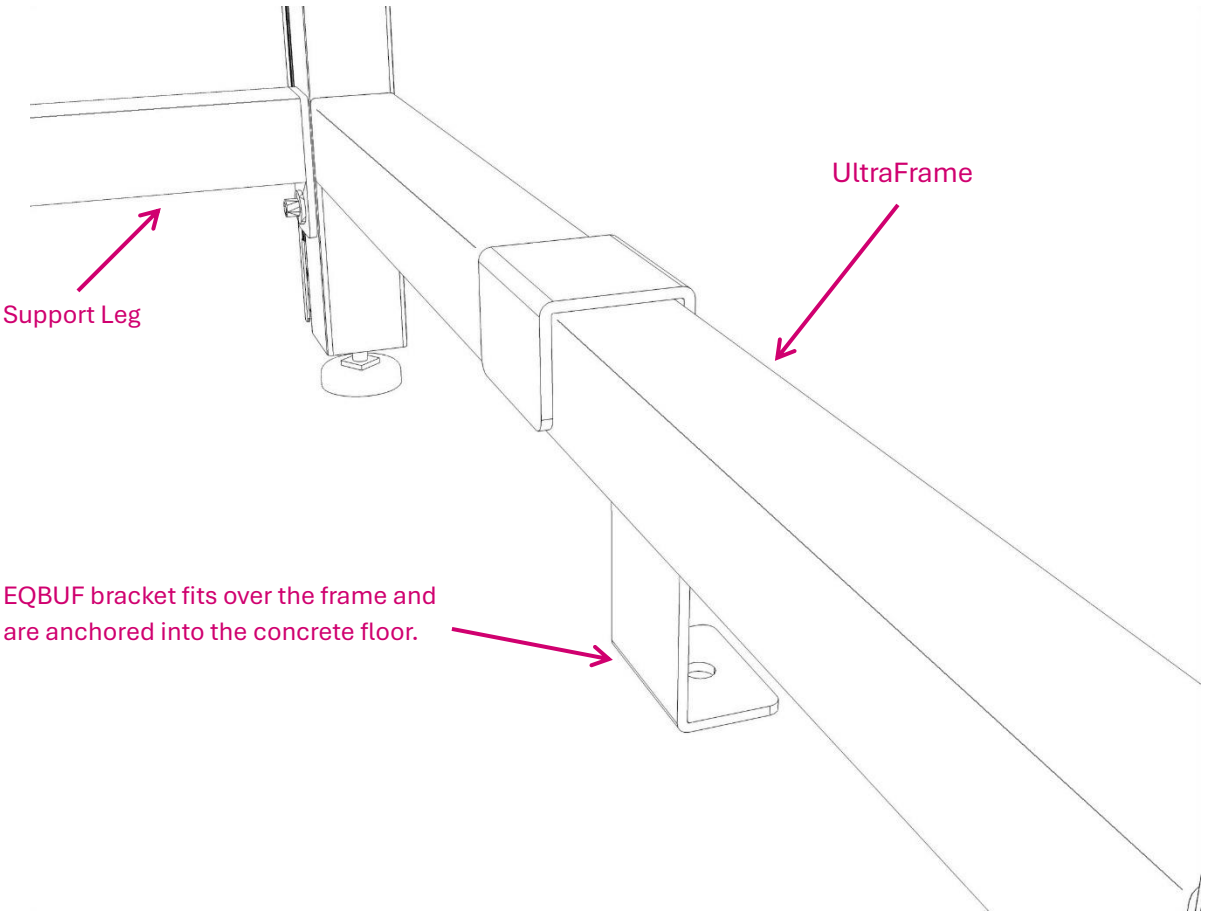
Symbiote's modular furniture system, UltraFrame, can be made more secure by adding a seismic attachment called the Earthquake Bracket, catalog number EQBUF. This bracket is designed to fit over the bottom horizontal part of the frame and is then firmly anchored into the floor of the building. Manufactured from strong 7-gauge steel, it contributes to greater furniture stability and prevents shifting or tipping over during an earthquake.

Since building safety codes vary depending on location, it's essential to consult with local code enforcement officials before installing the EQBUF bracket. They will verify that the correct hardware is utilized and follow the proper procedures for securing the furniture to the building's structure. Taking these extra precautions will improve safety and protect both the furniture and the people using it.

For the best stability during an earthquake, it is recommended each UltraFrame workstation be equipped with one Earthquake Bracket per frame. The use of multiple brackets assists in keeping the workstation furniture securely in place, reducing the risk of movement or tipping during a seismic event.

If your setup includes Support Legs (as shown in the illustration below), you should utilize the Earthquake Glide Clip, catalog number EQG, by attaching it over the Glides. The use of the EQG bracket on each leg anchors the workstation extremities and provides more stability.

To further strengthen the furniture anchorage, the brackets should face different directions. With brackets oriented in multiple directions, the furniture is better equipped to withstand seismic forces from all directions, improving workspace safety during seismic activity.



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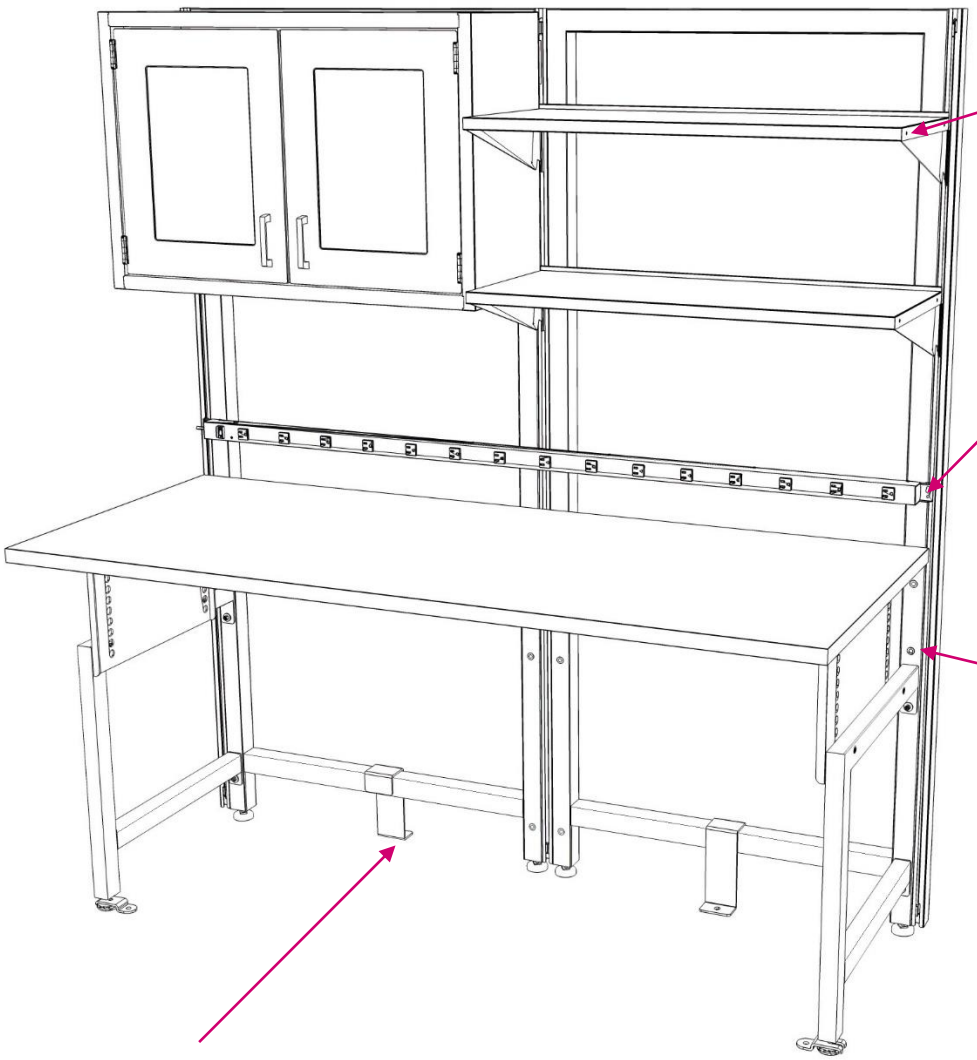
Handed bracketry secure cabinets and other components against dislodgement.

Frames are welded and connected together using wedge blocks and treaded tension rod.



All shelf components may be fastened together using common hardware.

Components attached to the frame including Plug Strips, Slatwall, Markerboards and Tote/Bin/Dispensing rails are fastened using handed brackets and screws.

UltraFrame has multiple, threaded “hard point” fasteners for bolted attachment of several components.

EQBUF brackets fasten over the frame to secure fixed or mobile systems to the floor.

EQG glide clips fasten over glides to secure systems, tables, and base cabinets to the floor.

Workbench and Table Applications

Symbiote offers a variety of height-adjustable tables and benches designed to be used in a variety of configurations and for many different applications. Regardless of how the table is being used, it is important to keep it stable, especially in earthquake-prone areas.

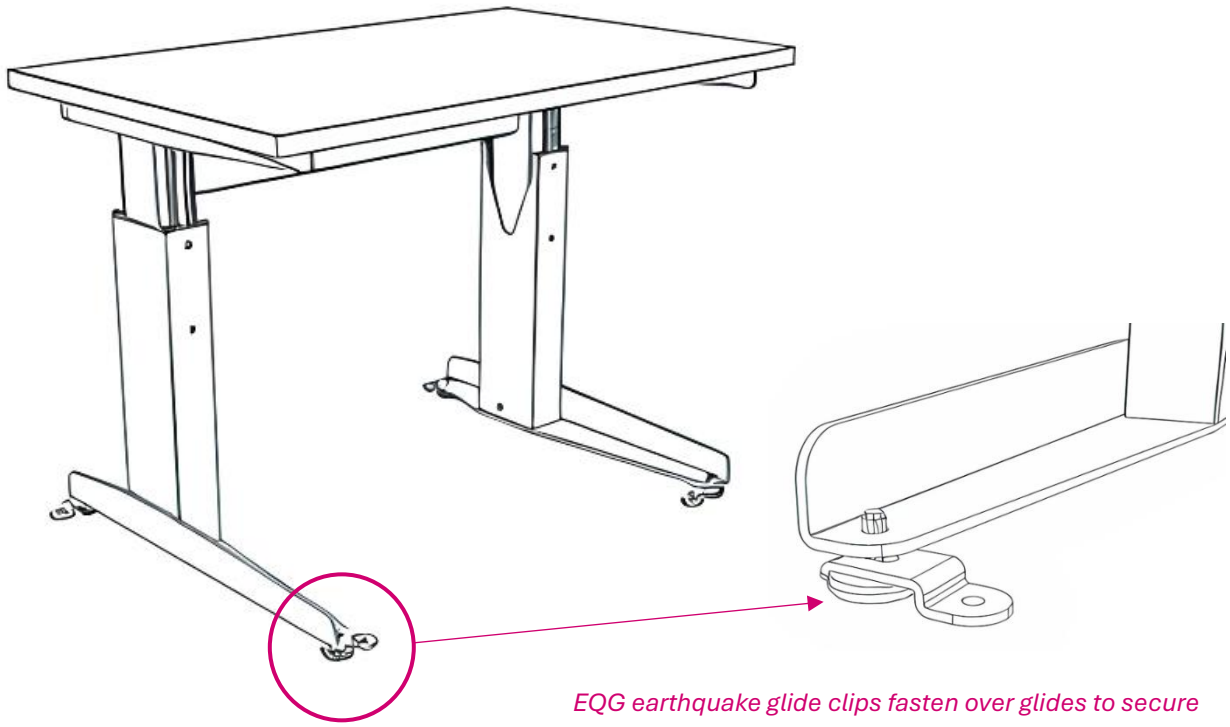
To stabilize the tables, the Earthquake Glide Clip (EQG) is designed to attach over the glide (the small foot at the bottom of the table leg) and anchor to the floor. This prevents the table from moving or tipping during a seismic event. Glides may require adjustment to compensate for uneven floor conditions.

For different types of tables, there are specific brackets that are recommended:

- For the ErgoStat Bench, Table Base, or Worktable series and the Tetrad table series, use Earthquake Glide Clip, catalog number EQG.
- For the 4-Legged Table series, uses Earthquake Glide Clip for FLT, catalog number EQG4L.

These brackets are manufactured from strong 7-gauge steel, providing extra durability and stability. Before installing the brackets, it is important to check with local code enforcement officials to verify the correct hardware is used and the tables are anchored properly to the building's structure, ensuring a secure anchorage.

For added security, it is recommended to alternate the bracket orientation, so they face different directions. This configuration allows the tables to stay secure against forces from various angles, whether the shaking comes from side-to-side, back-and-forth, or up-and-down motion. By securing tables in this way, the overall safety of the space is improved.



EQG earthquake glide clips fasten over glides to secure systems, tables, and base cabinets to the floor

Furniture-Integrated Power and Utilities

In healthcare facilities, especially those located in earthquake-prone regions, ensuring critical systems such as power and utilities remain operational during and after a seismic event is vital to operations. One important aspect is anchoring power feed points, which carry electrical power to key equipment such as medical devices, lighting, and other critical infrastructure. To comply with California Health Care Access and Information (HCAI) and the Office of Statewide Health Planning and Development (OSHPD) guidelines, power feeds, power poles, and utility service panels should be properly secured, increasing the probability they remain intact and functional, or be easily repairable, even in the aftermath of an earthquake.

Ceiling Grid Limitations

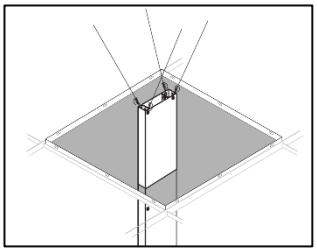
The ceiling grid, commonly used in hospitals and healthcare facilities, serves as a framework to support suspended ceilings. However, it's crucial to understand that the ceiling grid is not designed to be structural and should not support loads other than its own weight. Rather, it is primarily used for aesthetic and practical purposes, such as concealing mechanical systems and lighting. Code mandates suspended ceiling grids not be used for supporting additional loads of power distribution systems or other utilities.

During a seismic event, the ceiling grid is one of the first things likely to be easily damaged or to collapse from the intense seismic forces. If the Vertical Distributor or Ceiling Service Panel is supported directly by the ceiling grid, the weight and forces imposed during the earthquake would add additional stress to an already vulnerable structure, potentially accelerating its collapse. This could cause critical systems to become disconnected or damaged, leading to power loss during a critical period when the facility needs it most.

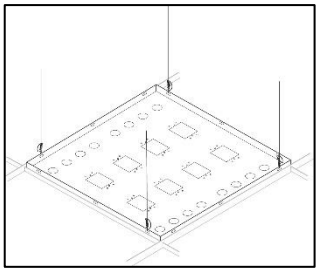
Securing Power and Utility Feeds Above the Ceiling Grid

To ensure Vertical Distributors and Ceiling Service Panels remain functional during and after an earthquake, it is essential to anchor them. They should be secured directly to the building's structural elements (see OPD-0002-13 Standard for details). This method ensures power and utilities are supported independently of the grid, increasing the likelihood they remain operational during/after seismic events.

Vertical Distributor Anchorage: Symbiote has an Anchoring Kit to keep the power pole secure during a seismic event. The kit attaches the pole to the floor and to structures above the ceiling grid. At the bottom, two brackets connect the power pole to the floor. The type of anchors used may depend on local building codes. At the top, the same brackets are used as "ears" through which #12 safety wire is used to tie to the building structure. By connecting the power pole at both the top and bottom, it improves stability and operation, even if the ceiling grid collapses. Use multiple anchor points to counter seismic forces from different directions.

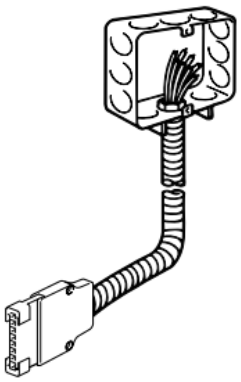


Ceiling Service Panel Anchorage: Similarly, the Ceiling Service Panel, although it fits within the 2x2-foot ceiling grid framework, also must not be supported by the grid. Once it is fitted within the grid, use #12 safety wire to securely support it from four or more hard building structure points. The support wires should be installed to accommodate the expected weight of the panel plus the weight of its connected utilities.



In both cases, the goal is to ensure that the vertical distributor or ceiling service panel remains securely in place regardless of the integrity of the ceiling grid. This setup prevents the power and utilities from being tethered and potentially ripped loose when the ceiling grid collapses. Proper support provides a resilient anchorage to enhance the integrity of power and utilities feed connections during a seismic event.

Break-away Power Feeds: Alternatively, HCAI/OSHPD/CSBC may require breakaway power connections within healthcare facilities to enhance safety, power isolation, and quick power restoration. These breakaway systems ensure power feeds can safely disconnect in case of accidental or seismic movement or an emergency, preventing damage to equipment and infrastructure. These feeds will disconnect under force and isolate electrical circuits that can be easily reconnected or repaired after the event. Breakaway power feeds are available as standard products or special-order items for some applications. These feeds can help meet seismic regulatory requirements by further safeguarding electrical service.



Summary

The California HCAI/OSHPD provides voluntary guidelines for modular furniture, including panel systems, tables, casework, etc. Contractors should review and adhere to these guidelines to ensure all furniture is securely anchored to the building structure, preventing movement or tipping. Similarly, vertical distributors and ceiling service panels must be secured independently from the ceiling grid for stability. Power feeds may incorporate breakaway electrical connectors. These measures help maintain the stability and functionality of the furniture while minimizing disruption to the integrated power and utility systems.

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